Chapter 5
From Childhood Poverty to Catfish:
A Conceptual Participatory Modelling Framework for Strategic Decision Making

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ABSTRACT

Strategic decision makers are frequently faced with unstructured problems that cannot be solved adequately by analytical means. In such situations, a better decision-making approach is one based on stakeholders' participation. A particular form of such an approach is known as participatory modelling, whereby participatory methods are used for knowledge elicitation while simulation modelling techniques are used to determine optimal strategies. In this paper, the authors discuss a participatory modelling framework using agent-based modelling and System Dynamics, which illustrates the use of the framework for two projects. These projects include participatory agent-based modelling of childhood poverty in Vietnam, and participatory System Dynamics modelling of the Vietnamese catfish industry.

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1. INTRODUCTION

Strategy is a concept that originates from the military and refers to the planning and directing of battles on a broad scale. Although in the corporate world, it is often used to refer to actions taken to offset those of competitors, in a more fundamental sense, it refers to the process of setting goals, selecting actions and committing resources to achieve these goals (Steiss, 2003). The strategy concept has value for both profit-seeking and non-profit organizations (Bourgeois III, 1980), although the public sector is different from the private one in terms of organisational goals, accountability mechanisms and resourcing constraints, strategic planning and decision making in both sectors are quite similar. In both sectors, strategies are used to set desired future directions for organisations (or communities) and are expressed in terms of particular outcomes, goals and objectives while policies provide the means to achieve these strategies.

In the modern complex world of politics and business, government and industry are constantly engaged in strategic planning and decision making activities in order to achieve desired objectives. Private and public organisations spend large amounts of money when faced with problems with high stakes, involving human perceptions and judgements, and whose resolutions have long-term repercussions (Bhushan & Rai, 2008). Since significant amount of resources are stake over extended periods of time coupled with the uncertainties present in the environment, strategic decision makers are faced with the need for robust decision frameworks and a range of tools to perform their tasks. Further compounding the situation is the fact that problems dealt at strategic level are very often complex and unstructured and hence cannot be adequately handled by purely content-oriented or analytical approaches (Hommes, Vinke-de Kruijf, Otter, & Bouma, 2009). In such conditions, a more suitable approach to strategic decision making is a process-oriented approach which accommodates participation, communication, collaboration, learning and divergent perceptions (Orr, Colvin, & King, 2007; Pahl-Wostl, 2007). Such an approach is provided by the participatory decision making approaches which are becoming increasingly popular for the management of natural resources.

In this paper, our focus is on a particular form of participatory approach to strategic decision making, more specifically participatory modelling, in which apart from the participatory nature of the approach there is heavy emphasis on simulation modelling to evaluate strategies and policies across a range of scenarios. In particular, we discuss a participatory modelling framework using two modelling techniques well-suited for these approaches, namely agent based modelling and System Dynamics and we illustrate the use of the framework in two work-in-progress projects.

2. PARTICIPATORY STRATEGIC DECISION MAKING USING SIMULATION MODELLING

2.1 Participatory Decision Making

A participatory decision making approach is one in which members of the public and/or stakeholders of the system being investigated participate in some ways in the decision making process. There exists a variety of participatory methodologies for public participation ranging from passive participation (information about already made plans and decisions are communicated to the public) to active participation (Giupponi, Mysiak, & Sgobbi, 2008). In active participatory research, members of a community identify a problem, collect and analyse data and act upon the problem to find solutions and promote social and political transformations (Selener, 1997). The rationale for participation is that the public is more likely to accept a policy when they are consulted beforehand or when they take an active part in